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11 South Meridian Street
Indianapolis, Indiana
46204
(317) 236-1313
(317) 231-7433 Fax

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Application No.:	09/618,615
Invention:	NEURAL NETWORKS FOR INGRESS MONITORING
Inventor:	Gary W. Sinde
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on November 2, 2005

Kim Tyree
(Signature)

Kim Tyree
(Printed Name)

SUBSTITUTE APPEAL BRIEF

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This substitute appeal brief is submitted in triplicate in furtherance of the notice of appeal filed August 11, 2005 and in response to the notice of non-compliant appeal brief dated October 27, 2005. The $250.00 fee for filing this appeal brief was submitted with the appeal brief submitted September 28, 2005, which this substitute appeal brief now replaces. Should any additional fees be required to constitute this a timely appeal brief, the Commissioner is hereby authorized to charge any such fees, or credit any overpayment, to Deposit Account No. 10-0435, with reference to Appellants' undersigned counsel's file 6573-62441. A duplicate copy of this authorization is enclosed for that purpose.

Real Party In Interest

The real party in interest is Trilithic, Inc., by virtue of an assignment recorded July 18, 2000 in the records of the Patent and Trademark Office on patent record reel 011127, beginning at frame 0826.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 1-40, all of the claims remaining in this application, are rejected. The rejections of all of claims 1-40 are appealed.

Status of Amendments

No amendments were filed subsequent to the rejection from which this appeal is taken.

Summary of Claimed Subject Matter

The invention may best be understood by referring to the following copies of appealed claims 1-40, annotated with parenthetic reference numbers and related notes from the detailed description.

With reference to claim 1, the invention is a method of identifying a source of ingress into a network (cable return path) including storing (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), comparing (page 13, line 10--page 14, line 6) the frequency spectrum of ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), and determining (page 13, line 10--page 14, line 6) from the comparison which of the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress.

With reference to claim 2, the invention is the method of claim 1 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path

distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which of the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 3, the invention is the method of claim 2 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress (CB signal, AM radio, common path distortion) to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 4, the invention is the method of claim 3 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 5, the invention is the method of claim 4 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 6, the invention is the method of claim 1 further including digitizing (page 11, lines 2-10) the frequency spectrum of the ingress.

With reference to claim 7, the invention is the method of claim 6 wherein comparing (page 13, line 10--page 14, line 6) the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line

6) from the comparison which frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 8, the invention is the method of claim 7 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 9, the invention is the method of claim 8 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 10, the invention is the method of claim 9 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 11, the invention is the method of claim 6 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path

distortion) includes digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 12, the invention is the method of claim 11 wherein comparing (page 13, line 10--page 14, line 6) the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which of the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 13, the invention is the method of claim 12 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 14, the invention is the method of claim 13 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 15, the invention is the method of claim 14 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10)

frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 16, the invention is the method of claim 1 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 17, the invention is the method of claim 16 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which thus-digitized (page 11, lines 2-10) frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 18, the invention is the method of claim 17 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 19, the invention is the method of claim 18 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-

digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 20, the invention is the method of claim 19 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 21, the invention is an apparatus (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for identifying a source of ingress into a network (cable return path) including memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) for storing frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress.

With reference to claim 22, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 23, the invention is the apparatus of claim 22 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 24, the invention is the apparatus of claim 23 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel®

spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 25, the invention is the apparatus of claim 24 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) further includes a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together including a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 26, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing (page 11, lines 2-10) the frequency spectrum of the ingress.

With reference to claim 27, the invention is the apparatus of claim 26 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-

based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 28, the invention is the apparatus of claim 27 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 29, the invention is the apparatus of claim 28 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to

the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 30, the invention is the apparatus of claim 29 wherein the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 31, the invention is the apparatus of claim 26 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and the memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) includes a memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) for storing the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 32, the invention is the apparatus of claim 31 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL

INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 33, the invention is the apparatus of claim 32 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 34, the invention is the apparatus of claim 33 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) further includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 35, the invention is the apparatus of claim 34 wherein the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum

solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 36, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and the memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) includes a memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) for storing the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 37, the invention is the apparatus of claim 36 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the stored frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 38, the invention is the apparatus of claim 37 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 39, the invention is the apparatus of claim 38 further including a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 40, the invention is the apparatus of claim 39 wherein the neural network (Fig. 6) and the back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

Grounds of Rejection to be Reviewed on Appeal

The grounds of rejection to be reviewed by the Board are:

(1) whether claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 would have been obvious under 35 U.S.C. § 103 based upon Nickolls U. S. Patent 5,251,626 (hereinafter Nickolls); and,

(2) whether claims 5, 10, 15, 20, 25, 30, 35 and 40 would have been obvious under 35 U.S.C. § 103 based upon the combination of Nickolls and Eberhart U. S. Patent

6,516,309 (hereinafter Eberhart).

Argument

I. Nickolls is non-analogous to the present invention.

The Examiner rejected claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 under 35 U. S. C. § 103. The Examiner relied upon Nickolls U. S. Patent 5,251,626 (hereinafter Nickolls) to support this rejection. The Examiner concedes that Nickolls does not teach "identifying 'ingress noise', which is to say externally generated noise in communication networks." The Examiner concludes, however, that "[b]ecause the two problems [the problem, a solution to which Nickolls proposes and the problem, a solution to which Appellant proposes] are mathematically analogous, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Nickolls to the identification of ingress noise." The Examiner further states that the present invention and Nickolls "differ only in whether or not the subject *noise* is generated externally (the instant invention) and internally (the reference invention)." Emphasis Appellant's.

One difficulty with the Examiner's position lies in the Examiner's statement of the problem to which Nickolls is addressed. The Examiner admits that Nickolls does not teach methods or apparatus for identifying ingress noise. Office Action, May 11, 2005, item 5 on page 2. Nickolls is not trying to identify a noise source. The information received by Nickolls's device is not noise, but electrical signals being generated in a human heart. Nickolls examines the heart-generated signals, and compares those signals to known heart distress signals to identify which kind of distress the heart being monitored is experiencing. Nickolls does this in order to apply the appropriate electrical signal to the distressed heart in an effort to reestablish normal heart electrical signals. Misidentifying the distress signal leads to applying the wrong kind of electrical signal, with potentially fatal consequences.

The present invention relates to the identification of the ingress *noise* from *external* and *unknown* source into networks.

Determining the nature of the distress by analyzing signals from the distressed heart is non-analogous to determining a source of ingress noise into a network.

The Examiner concedes that the cases cited by Applicant accurately reflect the current state of the law on the issue of non-analogous art. However, the Examiner then proceeds to pay only lip service to the holdings of these cases.

In In re Oetiker, 24 USPQ 2d 1443 (Fed. Cir. 1992), cited by both Appellant

and the Examiner to support their respective positions, the Court reversed the Board's reasoning and held that the Board erred in finding that "all hooking problems are analogous." Id. at 1445 The Court noted that

> [i]n order to rely on a reference as a basis for rejection of the applicant's invention, the reference must either be in the field of the applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. See In re Deminski, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986). Patent examination is necessarily conducted by hindsight, with complete knowledge of the applicant's invention, and the courts have recognized the subjective aspects of determining whether an inventor would reasonably be motivated to go to the field in which the examiner found the reference, in order to solve the problem confronting the inventor. We have reminded ourselves and the PTO that it is necessary to consider "the reality of the circumstances," In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979) - in other words, common sense - in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.
>
> It has not been shown that a person of ordinary skill, seeking to solve a problem of fastening a hose clamp, would reasonably be expected or motivated to look to fasteners for garments. The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a prima facie case of obviousness.
>
> * * *
>
> We conclude that the references on which the Board relied were improperly combined. Accordingly, the Board erred in holding the claims unpatentable under section 103. The rejection of claims 1-4 and 16-21 is REVERSED.

Oetiker at 1445-46. (emphasis added)

In spite of Oetiker's holding, however, the Examiner insists that Nickolls' invention is analogous to the present invention, "[b]ecause the two problems are mathematically analogous, it would have been obvious to one of ordinary skill in the art [of identifying the sources of ingress noise into a network] at the time of the invention to apply the teachings of Nickolls et al. [for identifying what type of cardiac distress a person is experiencing] to the identification of ingress noise." Office Action, May 11, 2005, item 5 on page 2. In doing so, the Examiner explicitly ignores the Federal Circuit's observation that "[i]t has not been shown that a person of ordinary skill, seeking to solve a problem of

fastening a hose clamp [here insert problem of determining the source of ingress noise into a network], would reasonably be expected or motivated to look to fasteners for garments [here insert techniques for identifying what type of cardiac distress a person is experiencing]. The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness."

The difference between Nickolls and the present invention is more than just "whether or not the subject noise is generated externally (the instant invention) or internally (the reference invention)" as the Examiner, conducting the examination by hindsight, subjectively insists. Office Action, May 11, 2005, item 7 on page 3. Nothing in Nickolls discloses or suggests anything having anything to do with noise at all. Indeed, Nickolls had better not respond to noise, since to do so presumably would result in the wrong signal being applied to the heart of the patient being treated by the apparatus and method of Nickolls, jeopardizing the heart rhythm of the patient being treated by the apparatus and method of Nickolls.

The present invention provides a method to monitor and identify the sources of ingress noise into a network. Ingress noise into a network can be from multiple different and unknown origins, external to the network. These sources include, but are by no means limited to, amateur radio, citizens' band radio, machinery noise, home appliance noise, home computer clock signals, AM radio, and other electrical sources. A person of ordinary skill in the field of the present invention, such as in the field of community antenna television (CATV), seeking to solve a problem of monitoring and identifying the source of ingress noise into networks, would *not* reasonably be expected or motivated to look to apparatus and methods for the identification of the sources of, and treatment of, human heart arrhythmias for aid.

"We have reminded ourselves and the PTO that it is necessary to consider 'the reality of the circumstances', In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979)-in other words, common sense-in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor." In re Oetiker, 977 F.2d at 1447. The Federal Circuit's common sense approach precludes Nickolls from being reasonably pertinent or analogous to the present invention. Nickolls is non-analogous art to the invention of the present claims. Therefore it would not have been 35 U. S. C. § 103 obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Nickolls to the identification of ingress noise.

II. There is neither motivation nor any expectation of success to combine Nickolls and Eberhart.

The Examiner rejected claims 5, 10, 15, 20, 25, 30, 35 and 40 under 35 U. S. C. § 103. The Examiner relied upon the combination of Nickolls and Eberhart to support this rejection. The Examiner concedes that Nickolls does not teach a particle swarm optimizer (hereinafter sometimes PSO). The Examiner calls Appellant's attention specifically to Eberhart's col. 1, line 64 to col. 2, line 7. The Examiner indicates that Eberhart teaches that a PSO can improve the efficiency of diagnostic neural networks. The Examiner further states that "it would have been obvious to one of the ordinary skills in the art, at the time of the invention, to add the teachings of Eberhart et al. to those of Nickolls et al." Id. at 4.

The PTO has the burden under section 103 to establish a *prima facie* case of obviousness (citing In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984)). Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138, 227 USPQ 543, 548 (Fed. Cir. 1985).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). That knowledge can not come from the applicant's invention itself. In re Oetiker, 977 F.2d at 1447, citing Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 678-79, 7 USPQ2d 1315, 1318 (Fed. Cir. 1988); In re Geiger, 815 F.2d 686, 687, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987); Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1147, 227 USPQ 543, 551 (Fed. Cir. 1985).

Second, there must be a reasonable expectation of success.

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Appellant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

> [V]irtually all [inventions] are combinations of old elements." *Environmental Designs, Ltd. v. Union Oil Co.,* 713 F.2d 693, 698, 218 U.S.P.Q. 865, 870 (Fed. Cir. 1983); *see also Richdel, Inc. v. Sunspool Corp.,* 714 F.2d 1573, 1579-80, 219 U.S.P.Q. 8, 12 (Fed.Cir.1983) ("Most, if not all, inventions are

> combinations and mostly of old elements."). An examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability.

In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998), citing Sensonics, Inc. v. Aerosonic Corp., 81 F.3d 1566, 1570, 38 USPQ.2d 1551, 1554 (Fed. Cir. 1996).

The Federal Circuit has identified three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. In re Rouffet, 149 F.3d at 1357. The factual inquiry whether to combine references must be thorough and searching. In re Lee, 61 USPQ.2d at 1533. Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). The examiner must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. In re Rouffet, 149 F.3d at 1359, 47 USPQ2d at 1459.

> It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." W.L. Gore v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). Thus the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

In re Lee, 61 USPQ2d at 1435.

The nature of the problem that the present invention attempted to solve relates to the identification of unknown external sources of ingress noise into networks. The teachings of Nickolls relate to identifying from signals generated by the heart itself the nature of the distress being experienced by the heart of a person in cardiac distress. The teachings of Eberhart relate to methods and apparatus for evolving neural networks. The nature of the problem that Nickolls attempted to solve is non-analogous and not pertinent to the present invention. Neither Nickolls nor Eberhart discloses or suggests any motivation to combine

their teachings to solve the problem to which the present invention is addressed. The Examiner did not explain any reason why a skilled artisan, without knowledge of the present invention, would have linked Nickolls and Eberhart as the focus of the 35 U. S. C. § 103 obviousness inquiry, or combined the two as the Examiner has. The only source linking Nickolls and Eberhart to the present invention is the present application. It is reasonable to infer that the Examiner selected these references with the assistance of hindsight based on Appellant's claims. Courts forbid the use of this kind of hindsight reconstruction in the selection of references to establish 35 U. S. C. § 103 obviousness. In re Rouffet, 149 F.3d at 1358. See In re Gorman, 933 F.2d 982, 986, 18 U.S.P.Q.2d 1885, 1888 (Fed. Cir. 1991). Lacking a motivation to combine references, the Examiner did not establish a *prima facie* case of obviousness.

> Neither Nickolls nor Eberhart teaches
>
> "identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress"

or providing

> "memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress."

Without establishing any motivation to combine the references, the Examiner has not made a *prima facie* case of 35 U. S. C. § 103 obviousness.

Accordingly, Applicant submits that the 35 U. S. C. § 103 rejection of claims 1-40 based upon Nickolls and Eberhart is erroneous and should be reversed. Such action is respectfully requested.

Respectfully submitted,

Richard D. Conard
Attorney Reg. No. 27321
Attorney for Appellant

Indianapolis, Indiana
(317)231-7285

Claims Appendix

1. A method of identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress.

2. The method of claim 1 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

3. The method of claim 2 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress.

4. The method of claim 3 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

5. The method of claim 4 wherein teaching a neural network the frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

6. The method of claim 1 further including digitizing the frequency spectrum of the ingress.

7. The method of claim 6 wherein comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the thus-digitized frequency spectrum of the ingress together include finding an optimum

solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

8. The method of claim 7 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress.

9. The method of claim 8 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

10. The method of claim 9 wherein teaching a neural network the frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

11. The method of claim 6 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress.

12. The method of claim 11 wherein comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

13. The method of claim 12 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress.

14. The method of claim 13 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-

digitized frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

15. The method of claim 14 wherein teaching a neural network the thus-digitized frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

16. The method of claim 1 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress.

17. The method of claim 16 wherein comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

18. The method of claim 17 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress.

19. The method of claim 18 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

20. The method of claim 19 wherein teaching a neural network the thus-digitized frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of

comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

21. Apparatus for identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress.

22. The apparatus of claim 21 wherein the device includes a device for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

23. The apparatus of claim 22 wherein the device includes a neural network, the device teaching the neural network the frequency spectra of known sources of ingress.

24. The apparatus of claim 23 wherein the device includes a back propagation neural network for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

25. The apparatus of claim 24 wherein the device further includes a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress, the neural network and back propagation neural network together including a particle swarm optimizer for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

26. The apparatus of claim 21 wherein the device includes a device for digitizing the frequency spectrum of the ingress.

27. The apparatus of claim 26 wherein the device includes a device for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

28. The apparatus of claim 27 wherein the device includes a neural network, the device teaching the neural network the frequency spectra of known sources of ingress.

29. The apparatus of claim 28 wherein the device includes a back propagation neural network for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

30. The apparatus of claim 29 wherein the neural network and back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

31. The apparatus of claim 26 wherein the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress.

32. The apparatus of claim 31 wherein the device includes a device for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

33. The apparatus of claim 32 wherein the device includes a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress.

34. The apparatus of claim 33 wherein the device further includes a back propagation neural network for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

35. The apparatus of claim 34 wherein the neural network and back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

36. The apparatus of claim 21 wherein the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress.

37. The apparatus of claim 36 wherein the device includes a device for finding an optimum solution to the problem of comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

38. The apparatus of claim 37 wherein the device includes a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress.

39. The apparatus of claim 38 further including a back propagation neural network for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

40. The apparatus of claim 39 wherein the neural network and the back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

Evidence Appendix

No evidence has been submitted in this case pursuant to 37 C. F. R. §§ 1.130-1.132.

Related Proceedings Appendix

There are no copies of decisions rendered by a court or the Board in any proceedings identified pursuant to 37 C. F. R. § 41.37(c)(1)(ii).